



Form and meaning in Hiaki (Yaqui) verbal reduplication.

Harley, H., & Leyva, M. (2009). Form and meaning in Hiaki (Yaqui) verbal reduplication. *International Journal of American Linguistics*, 75(2), 233-272. <https://doi.org/10.1086/596595>

[Link to publication record in Ulster University Research Portal](#)

Published in:

International Journal of American Linguistics

Publication Status:

Published (in print/issue): 01/04/2009

DOI:

[10.1086/596595](https://doi.org/10.1086/596595)

Document Version

Publisher's PDF, also known as Version of record

General rights

Copyright for the publications made accessible via Ulster University's Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact pure-support@ulster.ac.uk.

FORM AND MEANING IN HIAKI (YAQUI) VERBAL REDUPLICATION¹

HEIDI HARLEY AND MARIA FLOREZ LEYVA

UNIVERSITY OF ARIZONA

This paper provides a description of the reduplication patterns of Hiaki (also known as Yaqui or Yoeme), based on a corpus of hundreds of reduplicated verbs with example sentences. The various phonological shapes that reduplication can take are described and the morphological, phonological, and lexical factors which affect the particular reduplicant shape associated with a given verb stem are considered. The primary meanings which reduplication can convey are described, including habitual aspect, emphasis, and iteration, as well as a few secondary meanings associated with particular lexical items. It is established that reduplicant shape is not correlated with reduplication meaning, with one small subclass of exceptions. Finally, reduplicated forms of complex and compound verbs are discussed, with particular emphasis on their word-internal, head-marking character.

[KEYWORDS: Uto-Aztecán, habitual aspect, compound verbs, possessive verbs, root-conditioned allomorphy]

1. Introduction. Hiaki² has a robust, productive reduplication system which has been documented and discussed in a growing body of work (Escalante 1985; 1990, Martínez Fabian 1992, Dedrick and Casad 1999, Demers et al. 1999, Jelinek and Escalante 1988; 2001, Haugen 2003; 2004, Harley and Amarillas 2003, and Martínez Fabian and Álvarez González 2005). It is clear that Hiaki verbal reduplication can take a number of different forms and can convey a number of meanings. In some previous work (Escalante 1990 and Molina et al. 1999), one particular form–meaning relationship has been proposed, according to which a certain reduplicant shape is employed when

¹ We would like to profoundly thank our consultants for their patience and care in patiently answering repeated questions about very subtle distinctions in form and meaning. We would also like to thank Jaosn Haugen and two anonymous *IJAL* reviewers for very helpful comments on earlier drafts of this paper. This research was partially supported by the Social and Behavioral Sciences Research Institute at the University of Arizona, by the Jacobs Fund at the Whatcomb Museum in Bellingham, Washington, and by the National Science Foundation, proposal number 0446333.

² Hiaki, more commonly known as Yaqui or Yoeme, is a Uto-Aztecán language spoken in Sonora, Mexico and in Arizona, United States. “Hiaki” is the preferred spelling of our consultants, as it conforms to the spelling system for Hiaki in use by the Pascua Yaqui tribe and is a more accurate representation of the pronunciation. Consequently, we use “Hiaki” rather than “Yaqui” throughout.

a particular aspectual meaning is intended, based on a few minimal pairs. However, no systematic attempt to document reduplicant shapes and meanings across the verbal lexicon, and potentially discover correlations between them, has been undertaken.

In this paper, we survey the form–meaning relationship in reduplication on Hiaki verbs, describing the patterns observed in a database of reduplicated verb forms and example sentences and providing an overall picture of the general forms a reduplicant can take in the language, the conditions under which it is likely to take a given form, and the variety of meanings that reduplication can convey.

The most common reduplicant shape is a CV syllable; however, several other reduplicant shapes do occur. In **2**, we show that the morphological structure of the base in certain subclasses of verbs is predictive of a non-CV reduplicant. Nonetheless, some non-CV reduplicants must simply be specified with their verb stems.

The most common semantic effect of reduplication is habitual verb aspect, although several other reduplication meanings do occur. In **3**, we show that there is no general correspondence between reduplicant shape and the various meanings of reduplication, except possibly in the limited subcase of plural-agreement reduplication. Further, we argue that the availability of nonhabitual reduplication meanings is somewhat sensitive to the aspectual structure of the verb. In **5**, we describe reduplication with serial and compound verb forms, demonstrating that its “infixing” or “head-marking” behavior is retained even when the compound verb is semantically opaque, i.e., listed and idiomatic.

1.1. The corpus. In 2000–2001, Maria Florez Leyva (henceforth MFL), a native speaker of Arizona Hiaki, constructed a large database of reduplicated verb forms and example sentences at the University of Arizona. Provided with a list of all the verbs in the Molina et al. (1999) dictionary (584 forms), she worked to generate a reduplicated form for each distinct verb and one example sentence illustrating how the reduplicated form might be used, often in consultation with a Sonoran Hiaki speaker, Rosario Buitimea. Each verb was also tested for whether the generated reduplicated form could co-occur with the perfective suffix *-k*, to help identify the semantic effect of reduplication on that verb (see discussion in **3** below).

The corpus contains 343 verb forms and sentences, representing approximately 60% of the 584 verbs in the Molina et al. collection—all the distinct verbs from *A–Na*. Corpus construction proceeded alphabetically; time constraints prevented her from continuing with corpus construction beyond the letter *N*. As far as we know, there is no reason to think that the omitted verbs later in the alphabet behave systematically differently from the included verbs earlier in the alphabet. The corpus includes vowel-initial and consonant-

initial verbs, morphologically complex and morphologically simplex verbs, and verbs from all syntactic and semantic classes. In some of the examples given below, elicited sentences, or examples from the literature or texts, include verbs which begin with a letter later than *N*; these examples behave like those beginning with letters earlier than *N*.

Some items listed as verbs in the dictionary were discarded for various reasons. In some cases, a reduplicated form is listed in the dictionary as a headword alongside the base form. For example, the dictionary lists both *hiutua* ‘make a sound’ (lit., *hiu-tua* ‘sound-CAUS’) and *hihiutua*, the reduplicated form of *hiutua*, as separate verbs; in the constructed corpus, these represent only one verb. In other cases, the dictionary form was not included because MFL and our consultants had never encountered the form, as in the case of the form *haliwaka*, listed in the dictionary as an intransitive verb meaning ‘look for tracks’.

Examples presented below are drawn from this corpus or from elicitation sessions with both MFL and Mr. Buitimea or Mr. Santos Leyva, another speaker of Sonoran Hiaki, unless otherwise stated. In addition, each example in the paper has been checked with a group of four elders who teach at the Pascua Yaqui Tribe’s Language Development Center. Reported grammaticality judgments are from elicitation sessions.

1.2. Background: Hiaki syllable types, tone placement. There are five main types of Hiaki syllables, listed with examples in (1):³

(1) SYLLABLE SHAPE	EXAMPLE
(1a) CV	<i>hi.nu</i> ‘buy’
(1b) CVC	<i>kik.te</i> ‘stand.SG’
(1c) CV:	<i>kaa.te</i> ‘walk.SG’
(1d) V	<i>ho.a</i> ‘do’
(1e) VC	<i>ku.ak.te</i> ‘turn.INTR’

In the corpus, and throughout the paper, we represent Hiaki forms in the practical orthography in use in the United States, which is essentially phonemic.⁴ Most orthographic (C)VV sequences represent two syllables, where the second V forms the nucleus of its own syllable, as in (1d) above, *ho.a* ‘do’. However, Demers et al. (1999:47) note that some orthographic CVV

³ In a few cases, “superheavy” CV:C syllables occur, as in the form *waan.te* ‘run’ or *laau.tia* ‘slowly’ (the orthographic *u* represents the consonantal glide [w]; see discussion above), but these are extremely uncommon. No verbs containing such syllables appear in the corpus.

⁴ In the practical orthography, consonant symbols represent the same phones as their canonical English counterparts, e.g., *ch* = /tʃ/, etc. Vowel symbols have their IPA values. In Mexico, a similar but not identical practical orthography is used, with Spanish sound-symbol conventions employed, e.g., *j* = /h/.

sequences in fact represent CVC syllables in which the coda consonant is a glide, either [w] or [j]. These coda glide consonants are spelled with vowels, *i* or sometimes *e* for [j] and *u* for [w]. For example, the orthographic CVV sequence at the beginning of *haisa* ‘how’ in fact represents a single CVC syllable, [haj]; similarly, *nau* ‘together’ is the single syllable [naw].

Dedrick and Casad (1999:27), along with Johnson (1940) and Escalante (1985:5), report that all Hiaki words begin with a consonant, although this is not represented in the standard orthography. All orthographically vowel-initial words, they assert, are preglottalized, beginning with a glottal stop onset. Within words, however, onsetless vowel-initial syllables exist, as in *hoa* ‘do’, whose second syllable is simply [a], or *hiohte* ‘write’, whose second syllable is [oh].

Hiaki words have a lexical high tone or pitch accent on a particular syllable. The default placement of this tone is on the leftmost syllable of the word, but certain lexically marked words bear tone on a later syllable. This tone placement may be contrastive, as in, for example, *ánia* ‘to help’ and *anía* ‘world’. The orthographic convention is only to mark tone in minimal pairs of this type, and in texts tone is often not indicated at all, since context nearly always disambiguates.

Consequently, our corpus does not include information about the location of prominence/high tone in any of the forms.⁵ However, it is clear from previous literature that the location of tone on the base does not affect the shape of the reduplicant prefix. Consequently, the absence of tone from the corpus does not affect the main generalizations concerning segmental reduplicant shapes presented here. It does mean, however, that we cannot advance any generalizations or hypotheses about tone placement in reduplicated forms. In 2.1, however, we do comment on one previous claim about the interaction of tone, vowel length, and reduplication, based on data about vowel length in reduplicated forms from both the corpus and the literature; and in 4.3, we note a possible correlation between a particular reduplication meaning and tone placement, again based on data about tone placement reported in previous literature.

We now turn to a description of the form that reduplication takes in our corpus.

⁵ Indeed, our consultants (and MFL) often have difficulty locating noncanonical tone placement with certainty; this seems not to be unusual for Hiaki, where tone and stress interact confusingly (see, e.g., the remarks quoted in Dedrick and Casad 1999:26, n. 6). In Martínez Fabián and Munguía Duarte (2006), detailed phonetic analysis shows that both pitch and stress play a role in the prominence of a Hiaki syllable, and that pitch prominence and stress prominence may appear on different syllables in a single foot (a “double-aligned foot”). Martínez and Munguía do conclude that it is pitch, not stress, that is important in distinguishing minimal pairs like the *ánia/anía* pair above.

2. Reduplication shapes. Reduplication in Hiaki applies most saliently to verbs⁶ and usually expresses habitual aspect:⁷

- (2) *Aapo yena* → *Aapo ye-yena*
 S/he is.smoking → S/he RED-smokes

The shape of the reduplicant can depend idiosyncratically on the root to which it attaches, as shown by the pair of verbs below:

- (3a) *hinu* → *hi-hinu*
 ‘buy’ RED_S-buy
- Sara hiva uhyoi supe-m hi-hinu*
 Sara always pretty dress-PL RED-buy
 ‘Sara always buys pretty dresses’.

- (3b) *hima* → *himma*
 ‘throw’ RED_G.throw
- Kat=ee tahoori-m mekka himma*
 NEG.IMP=2SG cloth-PL away RED.throw
 ‘Don’t throw the cloth away!’

In (3a) the verb ‘to buy’, *hinu*, shows the most common form of reduplication, prefixation of a CV syllable, while the phonologically similar verb *hima* ‘to throw’ in (3b) shows gemination of the medial consonant rather than full reduplication: the onset consonant of the second syllable is copied but the first syllable is not.⁸ Below we argue that, although irreducible lexical idiosyncrasy in reduplicant shape does exist, as in these examples, important generalizations concerning reduplicant shape and the morphophonology of

⁶ Many adjectives also reduplicate, and some nouns also reduplicate to show plurality/distributivity. We only consider verbal reduplication here. Nouns which have been verbalized in the Hiaki *bahuvrihi* possessive construction (Jelinek and Escalante 1988 and Haugen 2004) reduplicate as verbs, with a habitual, not plural, interpretation; consequently, we conclude that this is regular verbal reduplication applied to a zero-derived verb based on a noun, rather than reduplication of a noun per se. See discussion in 3.3.

⁷ The following abbreviations are used in this paper: 1 first person, 2 second person, 3 third person, APPL applicative, ACC accusative, DESID desiderative, EMPH emphatic, GEN genitive, INTR intransitive, INCEPT inceptive, INCLIN inclination, P.IMPf past imperfective, PL plural, POSS possessive, PPL participle, PRF perfective, PRT particle, REFL reflexive, TR transitive, SG singular, VZR verbalizer, RED reduplicant, RED_S reduplicant composed of a single open, light syllable, RED_{CL} reduplicant composed of a single closed syllable, RED_{SS} reduplicant composed of two syllables, RED_G gemination functioning as reduplication, RED_{S+G} syllabic reduplicant with gemination.

⁸ In Molina et al. (1999), *hima* ‘throw’ is reported as having two possible reduplicated forms, *himma* and *hihima*, but our consultants—in consultation with four other elders—felt that the form **hihima* is ungrammatical.

TABLE 1
FORMS OF REDUPLICATION IN HIAKI

Shape	Description	Example	
RED _s	Single, open syllable	<i>hinu</i> > buy	<i>hi-hinu</i> RED _s -buy
RED _{CL}	Single, closed syllable	<i>chamta</i> > mash	<i>cham-chamta</i> RED _{CL} -mash
RED _{ss}	Two open syllables	<i>chitohte</i> > slip	<i>chito-chitohte</i> RED _{ss} -slip
RED _G	Gemination of first consonant of second syllable	<i>kaponte</i> > castrate	<i>kapponte</i> RED _G -castrate
RED _{s+G}	Single light syllable and gemination of first consonant of base	<i>kiimu</i> > enter	<i>kik-kimu</i> RED _{s+G} -enter

the base can be made for certain subclasses of verbs (see also Dedrick and Casad 1999 and Demers et al. 1999:45).

Each of the four reduplication patterns described in Haugen (2003) is represented in our database. The four distinct shapes are listed in table 1, from the most frequent to less frequent. Subscripts on the RED gloss are used throughout to distinguish the different shapes; these are described in table 1.

In table 1, we see that a reduplicant can consist of a light, open syllable; a closed syllable; or two light syllables. We also see gemination of the first consonant of the second syllable. This is included as a form of reduplication here because, as in (3*b*) above and as further shown below, this is how certain verbs are marked for the very meanings which are usually conveyed by the more typical syllabic reduplication. Finally, for some verbs, as with *kik-kimu* 'RED-fear', in the last row of table 1, the reduplication process combines syllabic reduplication with gemination, as first noted by Haugen (2003).

The percentages of verbs in our database which take each reduplicant form are given in the pie chart in figure 1.

2.1. Light-syllable reduplication. Reduplication resulting in a light, open syllable is the most frequent type, applying to the majority of verbs in the database. Verbs of many shapes and sizes are attested with light-syllable reduplication forms. Some examples are given here:

(4)	BASE STRUCTURE	VERB	REDUPLICATION	
(4a)	CV.CV	<i>me'a</i>	<i>me-me'a</i>	'kill (sg.)'
(4b)	CV:CV	<i>bwiika</i>	<i>bwi-bwika</i>	'sing'

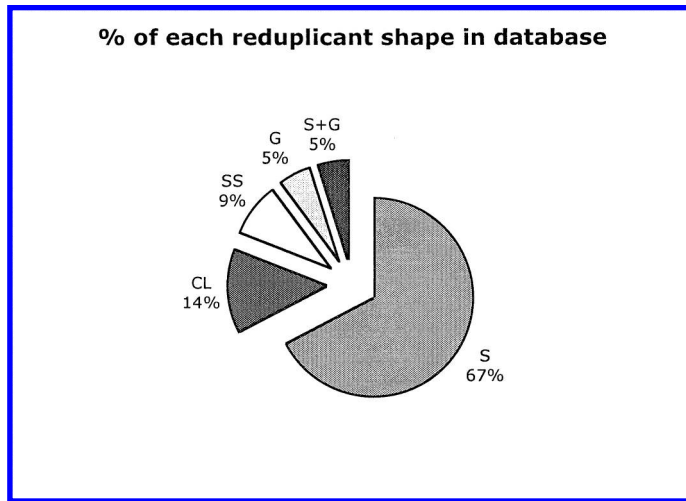


FIG. 1

(4c) CVC.CV	<i>hinte</i>	<i>hi-hinte</i>	'cover self, e.g., with a sheet'
(4d) CV.V.CV	<i>hiokoe</i>	<i>hi-hiokoe</i>	'forgive'
(4e) CV.V.CV.V	<i>hiu-tua</i>	<i>hi-hiu-tua</i>	'to make a sound'
	sound-CAUS		

Light-syllable reduplication can clearly apply to bases whose initial syllables are of any of the three possible types⁹ and can apply to bases with both complex and simplex morphemic structures. Because light-syllable reduplication applies to bases with such a variety of prosodic shapes and morphological structures, and because it is the most frequent type, we assume that it is the default form reduplication takes in the language and is not lexically specified.

When a base containing a long vowel in the initial syllable is reduplicated, the long vowel is shortened, as noted by Molina et al. (1999:287), among

⁹ Recall from 1.2 above that previous work suggests that Hiaki words never begin with a vowel-initial syllable (though such syllables may appear word-internally); orthographically, vowel-initial words begin with a glottal stop which is not spelled. When such a word is reduplicated, however, the initial glottal stop of the base is spelled, to distinguish the reduplicated form from a form beginning with a long vowel:

	BASE STRUCTURE	VERB	REDUPLICATION	
(i)	'V.CV	<i>ache</i>	<i>a-'ache</i>	'laugh'
(ii)	'V.CV.CV.V	<i>awiria</i>	<i>a-'awiria</i>	'to fatten' from <i>awi-ria</i> 'fat-APPL'

others; compare *bwiika* and *bwi-bwika* ‘sing’ in (4*b*) above. Vowel shortening with reduplication is a subcase of a more general process in Hiaki, according to which long vowels are shortened when certain (syllabic) affixes are added to a word. For example, when the applicative suffix *-ria* is added to the verb *bwiika* ‘to sing’, the resulting form is *bwikria*, where the stem’s long vowel is shortened and its final vowel truncated. Similarly the long vowel in the noun *meesa* ‘table’ may be shortened when the accusative suffix *-ta* is added, producing *mesata*. Demers et al. (1999:45–46) suggest a rule-based account of the general process. Haugen (2003) provides an OT treatment of the reduplication cases only.

Most descriptions of Hiaki make a distinction between two kinds of long vowels, ones with high tone on the first mora of the long vowel (e.g., *áa*), and ones with high tone on the second mora (e.g., *aá*), as in minimal pairs such as *káate* ‘build a house’ and *kaáte* ‘walk.sg’. Demers et al. (1999:45) claim that only the former type of long vowel undergoes shortening when reduplicated. Based on our corpus data, and also on the reduplicated forms given in both Dedrick and Casad (1999:31) and in Molina et al. (1999), this characterization appears to be a mistake. Long vowels with tone on the second mora clearly DO shorten under light-syllable reduplication, as shown by examples in Dedrick and Casad (1999:266), in Molina et al. (1999:287), and in our own corpus (as in 4*b* above). If anything, the generalization goes in the other direction: Long vowels with high tone on the first mora do NOT shorten under light-syllable reduplication, as explicitly stated by Dedrick and Casad (1999:31, 266) and illustrated by reduplicated forms given in Molina et al.¹⁰

We now turn to the less common reduplicant shapes, each of which is considered in some detail. Certain clear subclasses emerge in the case of the RED_{CL} and RED_{SS} reduplicants (2.2 and 2.3). Their special reduplicant shape can be predicted based on the prosodic and morphemic structure of their bases; we conclude that such cases need not be lexically listed. However, in

¹⁰ In fact, judging from the intuitions of our consultants, it may be that long vowels with high tone on the first mora do not underlyingly exist as such at all. When asked to pronounce example words from the literature which supposedly contain such vowels, MFL and Mr. Leyva separated the vowel into two syllables with a glottal stop. For example, MFL is sure that the verb usually written as *káate* ‘built a house’, when pronounced carefully, is *ká’ate*, although the glottal is not often fully articulated. (This is consistent with the fact that, in general, glottals are often reduced or eliminated in fluent speech.) In short, these words may not contain true long vowels but rather two sequential identical vowels in separate syllables, the second of which has an often-omitted glottal onset. It would be normal for the first syllable to bear high tone, as this is the default placement of tone; this, combined with reduction of the glottal, would result in the surface appearance of a long vowel with high tone on the first mora. This possibility is also suggested by Escalante (1985:12) and would explain why these apparent long vowels do not shorten under reduplication—they are not in fact underlyingly long vowels at all. We leave this line of investigation for future work.

the case of the RED_G and RED_{S+G} reduplicants, no predictive patterns can be identified in the base (2.4 and 2.5) and we conclude that these, then, must be lexically specified for their special reduplicant shape.

2.2. Disyllabic reduplication as root reduplication. Disyllabic reduplication is associated, in our corpus, with a trisyllabic base of a particular prosodic shape: CV.(C)V*k.tV* or CV.(C)V*h.tV*. The first syllable of such bases is light and the second (penultimate) syllable is (C)VC, where the coda C is either *k* or *h*. In nearly all cases, the final syllable is *-te* or *-ta*. When these alternate with each other on the same root, these are clearly morphemes marking transitivity, where *-te* is intransitive and *-ta* is transitive (Jelinek 1997).¹¹ In some cases, a verb does not alternate between *-te* and *-ta* forms, but the transitivity of the nonalternating verb correlates appropriately with the vowel it ends in. For example, *he'okte* 'hiccup' does not have a counterpart **he'okta*, but it is nonetheless intransitive, as appropriate for a verb ending in *-te*; conversely, *movekta* 'place upside down' has no counterpart **movekte*, but it is nonetheless transitive, as appropriate for *-ta*. We assume that final *-ta* and *-te* are morphemic in all these verbs.

A comprehensive list of the disyllabically reduplicating roots from our corpus is given in (5) below. A few of the verbs which reduplicate disyllabically in our database are listed with light-syllable reduplication in the Molina et al. (1999) dictionary; these forms are marked with a following % in parentheses. Where our group of elder consultants definitively disagreed with the dictionary, this is noted in a footnote. Other discrepancies between the reduplicated forms in our database and the dictionary are noted in footnotes throughout. Unless noted, the reduplicated form in the dictionary and the form in our database are identical, or there is no reduplicated form given in the dictionary.

(5) Disyllabic reduplications

VERB	REDUPLICATION	VERB MEANING
<i>chihak-ta</i>	<i>chihachihakta</i>	splash-TR
<i>chihak-te</i>	<i>chihachihakte</i> ¹²	splash-INTR
<i>chitoh-te</i>	<i>chitochitohte</i>	slip-INTR

¹¹ We also have come across the form *kala-kalahko* 'RED-clear', an adjective. It is unclear if there is a morpheme break before *-ko* in this form, but with verbs, the *-ta/-te* ending in disyllabic reduplications seems otherwise very regular. Given the clear importance of morphological structure to both heavy-syllable reduplications and disyllabic reduplication, it seems likely that *-ko* is a morpheme.

¹² Molina et al. (1999) give this reduplication as *chiachiakte*, although the related transitive reduplicated form given in the dictionary is the same as in our database; our consultants agree that the stem is *chihak-*, not *chiak-*, but note that intervocalic *h* is often dropped in fluent Hiaki speech.

<i>chiveh-te</i>	<i>chivechivehta</i>	spread out-TR
<i>chiveh-te</i>	<i>chivechivehte</i>	spread out-INTR
<i>etah-te</i>	<i>etaetahte (%)</i> ¹³	crack-INTR
<i>halah-te</i>	<i>halahalahte</i> ¹⁴	gasp-INTR
<i>haruh-te</i>	<i>haruharuhta</i>	crack.skin-TR (as in winnowing corn)
<i>hasoh-te</i>	<i>hasohasohte (%)</i>	pant-INTR, breathe hard
<i>heok-te</i>	<i>heoheokta</i>	peel-TR (e.g., burnt skin)
<i>he'ok-te</i>	<i>he'ohe'okte (%)</i>	hiccup-INTR
<i>heuh-te</i>	<i>heuheuhta</i> ¹⁵	wipe-TR, clean off
<i>ichak-te</i>	<i>icha'ichakte (%)</i>	be.bored-INTR
<i>ivak-te</i>	<i>iva'ivakta (%)</i>	hold.in.arms-TR, embrace, hug, cuddle
<i>kamuk-te</i>	<i>kamukamukta</i>	hold.in.mouth-TR (e.g., a liquid)
<i>kinak-te</i>	<i>kinakinakte</i>	grimace-INTR, squint
<i>kitok-te</i>	<i>kitokitokte</i>	contract.muscle-INTR
<i>kohak-te</i>	<i>kohakohakte</i>	billow-INTR
<i>kuak-te</i>	<i>kuakuakta</i>	turn-TR
<i>kuak-te</i>	<i>kuakuakte</i>	turn-INTR
<i>kupik-te</i>	<i>kupikupikte</i>	shut.eyes-INTR (redup: blinking) (INTR)
<i>mohak-te</i>	<i>mohamohakta</i>	rummage.through-TR
<i>mohak-te</i>	<i>mohamohakte</i>	rummage.through-INTR (something), crumble
<i>movek-te</i>	<i>movemovekta</i>	invert-TR, place upside down
<i>musuk-te</i>	<i>musumusukte</i>	bow.head-INTR
<i>yotoh-te</i>	<i>yotoyotohta</i>	make.dull-TR (with <i>bwawi</i> 'sharp')

In the bisyllabic reduplicant, the *k* or *h* coda consonant from the second syllable of the base does not appear (i.e., the reduplicant is made up of two light, open syllables). Molina et al. (1999:288) analyze the *-k* as morphemic, calling it a “thematic suffix.” Similarly, Martínez Fabian (1992), cited in Hau-

¹³ If all orthographically vowel-initial Hiaki verbs begin with a glottal stop, as claimed in the literature, it is surprising that this form is not reduplicated as *eta'etahte*. However, as noted in n. 10 above, intervocalic glottal stops are often reduced or omitted in normal speech. Given this absence of a glottal in this form, it may be worth considering the possibility that intervocalic glottal stops are actually epenthetic, inserted to realize a hiatus between two vowels serving as nuclei of separate syllables. In cases where syllabification is independently clear, as here, such an epenthetic glottal stop would be unnecessary. The apparent absence of any glottal onsets following coda consonants or glottal codas preceding onset consonants could be taken as support for this view. The behavior of vowel-initial suffixes such as the desiderative *-ii'aa* could be a fruitful place to begin exploration of this possibility. See examples of reduplication with *-ii'aa* in n. 39 below.

¹⁴ Molina et al. (1999) assert that this verb cannot reduplicate.

¹⁵ Molina et al. (1999) give *heoheota* for this verb; our consultants felt that *heuheuhta* is a more accurate transcription of their pronunciation.

gen (2003), treats it as a morpheme, possibly originating from the participial/perfective *-k* suffix. However, if morphemic, it is clearly not productive—this *-k* may never be omitted from these verbs—and its semantic or syntactic contribution, if any, is unidentifiable.¹⁶ The morphemic status of the *-h-* coda consonant in the verbs of form CV.(C)V*h*.tV is even less clear; no morphemic status for this consonant has been suggested in the literature that we know of. Consequently, we do not indicate a morphemic break before the *k* or *h* of these verbs, though we consider it likely that there is one (see below for further discussion).

Given this general prosodic base form, the bisyllabic reduplicant shape is essentially always predictable. Only one form in our corpus has the appropriate shape but does not reduplicate disyllabically, rather it employs the default light-syllable reduplicant:

(6a) *hiohte* ‘write’, *hihiohte*

(6b) *Empo si uhyoi-si hi-hiohte*
 2SG EMPH beautiful-ADV RED-write
 ‘You write so beautifully’.

In this case, however, the *-te* morpheme at the end of the word is not the same intransitive suffix *-te* occurring in the other verbs above. The intransitive suffix *-te* has a *-ti* allomorph which appears when a derivational suffix is added to the stem. The verb *hiohte* does not exhibit this *-tel/-ti* allomorphy between free and bound forms of the stem. It is thus likely that the *-te* in *hiohte* is a different morpheme, probably the verbalizer *-te* which suffixes to nominal bases to create verbs meaning ‘make N, use N’. In this case, the verbalizer *-te* is affixed to the bound stem of the noun *hiosia* ‘paper’, *hios-*. There is a regular phonological rule of *s > h* before consonants in the language, and our consultants agree that the form *hioste* is a potential (though unlikely) alternate pronunciation of *hiohte*. (See also the discussion of *hinte* ‘cover sb.’ in 2.3 below.) Assuming that *hiohte* contains a different final morpheme than the other CV.(C)V*k/h*-tV verbs in our database, it seems likely that the cases in which a verb takes a disyllabic reduplicant are rule governed, rather than lexically listed.

Haugen (2003) also cites disyllabic reduplication cases from the Molina et al. dictionary which lack the stem-final *k* or *h*: *hechihechite* ‘scratch’ and *riuriuta* ‘fracture’. (Note this last form involves disyllabic CV.V reduplicants.)

¹⁶ To form the perfective of these verbs, the regular perfective *-k* is added to the unaltered stem: *mohakte-k* ‘crumble-PRF’. Similarly, their past participle is formed with the regular past participle suffix *-ka*; the word-internal *-k*, if it has its source in perfective *-k*, no longer exhibits any aspectual properties.

These forms still involve stranding the (in)transitivizing *-te* or *-ta* suffix.¹⁷ In these cases, then, the reduplicant consists of the entire root. If the stem-final *-k* or *-h* in the forms above, from the corpus, is morphemic (a “theme consonant,” perhaps), then disyllabic reduplication in Hiaki can be generally characterized as root reduplication, as suggested in Haugen (2003). We can then summarize the data we have considered so far, as follows:

- (7a) When reduplication applies to a verb with a bisyllabic root, followed (optionally) by a *-k* or *-h* coda consonant, followed by one of the transitivity-marking suffixes *-te* or *-ta*, the reduplicant copies the (disyllabic, bimoraic) verb root.
- (7b) Elsewhere, reduplication consists of a single light syllable which copies the onset and first vowel of the verb stem.

2.3. Closed syllable reduplication. As shown in table 1 above, reduplication may also result in a CVC reduplicant. Below we argue that this type of reduplication, like the disyllabic type, is root reduplication, applying only to verbs with a certain morphophonological structure.

Closed-syllable reduplication follows much the same pattern as disyllabic reduplication, almost always stranding a *-te* or *-ta* morpheme, again with just a few exceptions. First, the nonexceptional cases are presented below. As above, verbs for which the Molina et al. dictionary gives a light-syllable reduplicant, in contrast to the CVC reduplicant in our database, are marked with a %. Other differences are footnoted.

(8) Closed-syllable reduplications

VERB	REDUPLICATION	VERB MEANING
<i>bwak-ta</i>	<i>bwakbwakta</i> (%)	pluck.out-TR (take from soil)
<i>chak-te</i>	<i>chakchakte</i>	drip-INTR
<i>cham-ta</i>	<i>chamchamta</i>	mash-TR, smash (e.g., maize, roots, herbs)
<i>cham-te</i>	<i>chamchamte</i>	mash-INTR
<i>chap-ta</i>	<i>chapchapta</i>	cut-TR (with scissors)
<i>chep-ta</i>	<i>chepchepta</i>	jump-TR, step over
<i>chep-te</i>	<i>chepchepte</i>	jump-INTR, take a step
<i>chih-ta</i>	<i>chihchihta</i>	mash.pl-TR
<i>chim-ta</i>	<i>chimchimta</i>	squeeze-TR, pinch lightly

¹⁷ Haugen (2003) also presents the form *moína ~ moimoina* ‘shoot’ from Molina et al. (1999) as a disyllabic case, with no immediately obvious morpheme boundary between the reduplicated *moi-* part of the stem and the nonreduplicated *-na*. Our consultants agree that the full form here should be *muhina ~ muhimuhina*. There is, however, some evidence that the initial disyllabic part of *moi-/muhi-* is morphemic; see discussion below.

<i>chip-ta</i>	<i>chipchipta</i>	sip-TR, taste
<i>hak-ta</i>	<i>hakhakta</i>	inhale-TR
<i>ham-ta</i>	<i>hamhamta</i>	break-TR (e.g., glassware, dishes, cups)
<i>ham-te</i>	<i>hamhamte</i>	break-INTR
<i>hap-te</i>	<i>haphapte</i> (%)	stand.pl-INTR
<i>hok-te</i>	<i>hokhokte</i> ¹⁸	wheeze-INTR
<i>huk-ta</i>	<i>hukhukta</i>	sniff-TR
<i>hut-ta</i>	<i>huthutta</i> (%)	abrade-TR, scrape (skin)
<i>hut-te</i>	<i>huthutte</i> (%)	abrade-INTR
<i>kep-ta</i>	<i>kepkepta</i>	put.in.mouth-TR
<i>kit-ta</i>	<i>kitkitta</i> ¹⁹	knead-TR, pinch (e.g., dough)
<i>kik-te</i>	<i>kikkikte</i>	stand.sg-INTR
<i>kit-te</i>	<i>kitkitte</i>	knead-INTR
<i>kok-te</i>	<i>kokkokte</i>	wear.necklace-INTR, wear scarf
<i>kon-ta</i>	<i>konkonta</i>	encircle-TR, surround
<i>kon-te</i>	<i>konkonte</i> ²⁰ (%)	move.in.circle-INTR, procession
<i>kop-ta</i>	<i>kopkopta</i>	forget-TR
<i>kop-te</i>	<i>kopkopte</i>	desirous-INTR (takes PP object)
<i>kot-ta</i>	<i>kotkotta</i>	break-TR, snap (e.g., a stick)
<i>kot-te</i>	<i>kotkotte</i>	break-INTR
<i>kup-te</i>	<i>kupkupte</i>	become.evening-INTR
<i>kut-ta</i>	<i>kutkutta</i>	tune-TR (e.g., a violin), or tighten-TR (e.g., a lid)
<i>kut-te</i>	<i>kutkutte</i>	tighten-INTR, tune-INTR
<i>lot-te</i>	<i>lotlotte</i>	tire-INTR
<i>mah-ta</i>	<i>mahmahta</i>	teach-TR
<i>mam-te</i>	<i>mammamte</i>	touch-INTR (takes PP object)
<i>moh-ta</i>	<i>mohmohta</i>	pulverize-TR, crumble
<i>moh-te</i>	<i>mohmohte</i>	disintegrate-INTR, rot
<i>moi-ta</i>	<i>moimoita</i> ²¹	plow-TR
<i>moi-te</i>	<i>moimoite</i> ²²	plow-INTR
<i>muh-te</i>	<i>muhmuhte</i>	worship-INTR, genuflect

¹⁸ Molina et al. (1999) assert that this verb cannot reduplicate.

¹⁹ Molina et al. (1999) reduplicate this verb as *kikitta*; our consultants assert that this form does not exist.

²⁰ Molina et al. (1999) reduplicate this verb as *kokonte* (although they give a closed-syllable reduplicant for the transitive form with *-ta* above, as in our database).

²¹ Recall that although most CVV sequences in Hiaki are bisyllabic (CV.V), a few orthographic VV sequences in fact are monosyllabic, ending in an offglide [j] or [w] which is spelled with a vowel. Hence, *moita* is included here, as a CVC reduplicant, rather than with the CV.V disyllabic reduplicants mentioned above. Molina et al. (1999) reduplicate this verb as *momota* (with loss of offglide *-i-*), but our consultants assert that there is no such form.

²² Molina et al. (1999) reduplicate this verb as *momote* (again, with loss of offglide *-i-*).

In only two cases does a verb in the database with a CVC_{te} shape FAIL to exhibit closed syllable reduplication, namely, the verbs *hinte* ‘cover (someone)’ and *monte* ‘speak, comment’, which reduplicate with a light syllable, as *hi-hinte* (illustrated in 4 above) and *mo-monte*. As with the case of *hiohte* ‘write’ (in 6 above), *hinte* is formed from the bound stem of a noun, in this case *hiniam* ‘shawl’, with the verbalizing *-te* suffix, not the intransitive marker *-te*. Although *monte* ‘speak’ is not apparently formed from a nominal stem, the *-te* marker is again not intransitive *-te* but something else, as indicated by the absence of *-te/-ti* allomorphy in derived forms like *monte-ri* ‘speak-PPL’, i.e., ‘(that which was) spoken’.

The generality of the pattern with *-te/-ta* suggests that the same morphemic context which triggers disyllabic reduplication also triggers closed-syllable reduplication and that, indeed, closed-syllable reduplication should be subsumed under the same descriptive rule as disyllabic reduplication. The descriptive generalization in (7) above can be reformulated to cover both cases:

- (9a) When a verb contains one of the transitivity-marking suffixes *-te* or *-ta*, attached either to a closed-syllable root or to a bisyllabic root followed (optionally) by a *-k* or *-h* coda consonant, reduplication copies the entire verb root.
- (9b) Elsewhere, reduplication consists of a single light syllable which copies the onset and first vowel of the verb stem.

There are also a few verbs in the corpus which exhibit closed-syllable reduplication in the absence of the crucial *-ta/te* suffixes. They are:

- (10) Closed-syllable reduplications without stranded *-ta/-te*

VERB	REDUPLICATION	VERB MEANING
<i>atbwa</i>	<i>atatbwa</i> (%)	laugh at
<i>etbwa</i>	<i>etetbwa</i> ²³	steal, rob, burglarize
<i>chiktu</i>	<i>chikchiktu</i>	disoriented, lost
<i>kiksime</i>	<i>kikkiksime</i>	go along standing up

For *chiktu*, there is also the possibility of a derivation from the stem of *chikola* ‘around’ and the copular verbalizer *-tu*. In *kik-sime*, there is definitely a morpheme boundary after *kik-*; this is a compound formed from the

²³ The absence of an initial glottal in the base in this form and the one above may call into question the claim that all vowel-initial words in Hiaki begin with a glottal stop. See discussion of consonant-initial glottals in n. 10 and n. 13 above.

stem of the verb *kikte* ‘stand.sg’ and *siime* ‘go.sg’.²⁴ As noted in n. 17 above, the verb *moi-moina* ‘RED-shoot’ also exhibits this pattern and, again, in this case, *moi-* seems to be a root morpheme. It serves as the stem form when derivational suffixes are applied to this verb, as in *moi-ri* ‘shoot-ADJ.PPL’, suggesting that the *-na* in *moina* is suffixal. These CVC reduplications, then, are clearly root reduplications even though the *-ta/-te* suffixes are not present; we assume they must be lexically marked.²⁵

In the other two cases, *etbwa* ‘steal’ and *atbwa* ‘laugh at’, however, no clear morpheme boundary after the heavy syllable can be identified. Similarly, no clear morpheme boundary is identifiable in a few other cases from the literature that do not appear in the corpus. Haugen (2003) gives *vamse* ‘hurry’, which reduplicates as *vam-vamse*, and in which *vam-* is not demonstrably a morpheme; the stem form of this verb is *vamsi-*, not *vam-*. Based on examples like these, and on a broader sample of Uto-Aztecan reduplication in general, Haugen (2003; 2004) argues for a prosodically based characterization of Hiaki and U-A reduplication, contra the claims emerging from Moravcik’s (1978) cross-linguistic survey of reduplication patterns. It is certainly worth noting that there is no case of CVC reduplication in which a reduplicant copies phonological material of the base that is itself not already part of a CVC initial syllable; all closed-syllable reduplicants are formed from verbs containing initial CVC syllables. In other words, syllabic reduplication in Hiaki never copies onset material from the second syllable of a base into a coda position in the reduplicant. Nonetheless, because in the vast majority of these cases, closed-syllable reduplication coincides with the presence of a morpheme boundary within the verb stem, we conclude that it is best characterized as root reduplication, rather than as prosodically driven syllable reduplication.

A final note on the moraic status of the final consonant in these CVC roots. Demers et al. (1999) argue that in Hiaki, such syllables, though closed, are not heavy; rather, their final consonant is nonmoraic, which explains their failure to attract high tone when reduplicated (see discussion of tone in 4.3 below), in contrast to the gemination and syllable + gemination cases described below. The nonmoraic hypothesis also allows for the occurrence of some apparently “superheavy” syllables, in stems like *waante* ‘run’. We have no alternative hypothesis to offer for the facts on which Demers et al. base their conclusions about these coda consonants. However, if these coda consonants ARE moraic, it would fit an overall prosodic pattern concerning

²⁴ In fact, this can also reduplicate as *kik-si-sime*; see the discussion of compound reduplication in 5 below.

²⁵ Alternatively, the rule could be formulated more generally, as applying to any CVC root + suffix combination, and the *hiohte* and *hinte* cases with the denominal verbalizing suffix *-te* marked as exceptions to it.

lexical roots in Hiaki: setting these CVC roots aside, lexical roots are generally bimoraic or bigger, minimally CV: or CVCV. If the final coda consonant in these CVC roots is not moraic, then these would be the only significant class of monomoraic roots in the language (unless, of course, they are not roots; in that case the evidence for prosodically driven reduplicant shape would be overwhelming). We suggest that a moraic analysis of these coda consonants should at least be considered.

2.4. Gemination. Gemination was first recognized as a reduplicant allomorph by Haugen (2003). Certain verbs exhibit gemination in the usual reduplication contexts, rather than full reduplication. These are listed in (11), grouped according to the geminated medial consonant, rather than alphabetically.

(11) Geminating verbs

VERB	GEMINATED FORM	VERB MEANING
<i>hahame</i>	<i>hahhame</i>	catch up
<i>hahase</i>	<i>hahhase</i>	(1) chase, pursue; (2) follow a road
<i>hahau</i>	<i>hahhau</i>	scoop up with hand
<i>huuha</i>	<i>huhha</i>	pass gas; fart; to sting; insect bite
<i>kakae</i>	<i>kakkae</i>	be sweet
<i>koko</i>	<i>kokko</i>	dying (PL)
<i>hima</i>	<i>himma</i>	toss, discard, divorce, leave (behind), throw
<i>komona</i>	<i>kommona</i>	dampen, soak, make something wet, usually a cloth
<i>komonia</i>	<i>kommonia</i> ²⁶	dampen, soak
<i>mamak</i>	<i>mamma</i>	have hands
<i>mamato</i>	<i>mammato</i> ²⁷	imitate, copy
<i>mamne</i>	<i>mammane</i>	put hands (on)
<i>maveta</i>	<i>mavveta</i>	receive, accept
<i>kapoonte</i>	<i>kappoonte</i>	castrate
<i>hichike</i>	<i>hitchike</i> ²⁸	sweeping

Noncoronal consonants seem to be the most susceptible to gemination. There are no clear morphophonological properties of the base which identify

²⁶ Molina et al. (1999) reduplicate this verb with reduplication + gemination, as *kokkomonia*, but our four elders feel this is ungrammatical.

²⁷ Molina et al. (1999) assert that this verb does not reduplicate.

²⁸ As mentioned above, orthographic *ch* corresponds to the affricate [tʃ]; *tch* is the orthographic representation of geminated [tʃ], which consists of a prolongation of the stop portion of the affricate. Transcribed, this alternation would be [hitʃike 'sweep', [hittʃike] 'RED_G.sweep'. Note that this verb is likely derived from the historical nonspecific object prefix *hi-* and the verb *chike* 'brush'.

geminating verbs as distinct from nongeminating verbs, as noted in (3) above; we assume that these verbs are lexically marked to undergo gemination in reduplication contexts.

2.5. Syllabic reduplication with gemination. Finally, we list the verbs in the corpus which geminate in addition to reduplicating.

(12) Reduplication with gemination

VERB	REDUPLICATED FORM	VERB MEANING
<i>haita</i>	<i>hahhaita</i>	despise, be disgusted by
<i>hoa</i>	<i>hohhoa</i>	put, place
<i>hoteka</i>	<i>hohhoteka</i> ²⁹	sit down
<i>kaavetuk</i>	<i>kakkavetu</i>	gone, disappeared
<i>kaita</i>	<i>kakkaitatu</i>	scarce, out of stock
<i>kecha</i>	<i>kekkecha</i>	stand up (TR)
<i>kia</i>	<i>kikkia</i>	fit into
<i>kiale</i>	<i>kikkiale</i>	enjoy taste of
<i>kiima</i>	<i>kikkiima</i>	bring (PL), insert (PL)
<i>kiimu</i>	<i>kikkimu</i>	enter
<i>kivacha</i>	<i>kikkivacha</i>	bring into a house
<i>kivake</i>	<i>kikkivake</i> (%)	enter, go into
<i>koche</i>	<i>kokkoche</i>	sleep
<i>mahai</i>	<i>mammahe</i> ³⁰	be afraid, scared
<i>matchu</i>	<i>mammatchu</i>	dawn, beginning of a new day

Note that labial and velar/glottal consonants seem to be the most susceptible to gemination in the gemination + reduplication context as well. It is clear, however, that gemination is not a general feature associated with noncoronal consonants, since several such forms in the database show simple CV reduplication, such as *hinu* ‘buy’ in (3a) above; similar examples with other consonants include *kaate* ‘walk.PL’, which reduplicates as *ka-kate*, and *maka* ‘give’ ~ *ma-maka*. As with the geminating verbs (above), we assume that these reduplication + gemination verbs must be marked as such in the lexicon.

2.6. Inter- and intraspeaker variation. Given the differences between the corpus and the dictionary in the reduplicant shape of some verbs, there is clearly some dialectal and perhaps even idiolectal variation in the reduplicant shapes associated with particular bases. MFL is a speaker of Arizona Hiaki, as are the speakers who produced the Molina et al. (1999) dictionary. Differences between the corpus and the dictionary may be due to the fact that

²⁹ Molina et al. (1999) give a reduplication + gemination form for the related *hoote* ‘be sitting’, *hohhote*; this verb in our database is given with a simple light-syllable reduplication.

³⁰ The form *mahe-* appears in verbs derived from the adjectival stem *mahai*.

we consulted with speakers of Sonora Hiaki while constructing the database, or may be due to dialectal variation within Arizona Hiaki, which is known to exist. (MFL is from the South Tucson Hiaki community, rather than Old Pascua, for example.) It is important to note that in nearly every case in which a difference exists between the dictionary and the database, the dictionary specifies light-syllable reduplication in contrast to the database's closed-syllable or disyllabic reduplication. On the assumption that light-syllable reduplication is the default, elsewhere form, a shift toward light reduplication would be a natural "overgeneralization" pattern produced by speakers who might perhaps have reanalyzed certain of these ROOT + *te/ta* verbs as monomorphemic, or who might not implement root reduplication as a general subpattern of certain morphological classes of stems but rather as an irregular form marked for individual lexical items.

Our consultants are usually quite clear about what reduplication shape they consider correct for a given verb; in elicitation contexts, at any rate, a given speaker does not generally allow variations in reduplicant shape. Our consultants emphatically rejected, for example, **ko-konta* 'RED_S-surround' as a variant of *kon-konta* 'RED_{CL}-surround'; similarly, **ko-kopta* 'RED_S-forget' is not an alternative to *kop-kopte* 'RED_{CL}-forget' for them. Nor did we run into many cases where one person preferred one form and another preferred another (for one exception, see n. 46).

However, a note of caution is in order here. The database contains only a single, spontaneously generated reduplication form for each verb. During the construction of the database, each verb was not tested for whether it might also permit one of the other reduplicant shapes, in addition to the one spontaneously produced by MFL and checked with other speakers. We thus cannot be sure that only one reduplicant shape is possible for each one of the 343 verbs in the database, i.e., that no intraspeaker variation is possible. For many verbs, like *konta* and *kopte*, which we discussed explicitly in elicitation sessions, we know for sure that only one shape is available, so intraspeaker variation in reduplicant shape is ruled out for these forms. This is consistent with the reduplications found in the Hiaki texts we have access to: we do not tend to see multiple reduplicant shapes appearing with a single verb. In the few cases in which we do have positive evidence that a single speaker can accept more than one reduplicant shape with a single verb, the distinct shape is semantically contrastive. See further discussion of this point in 4 below.

3. Reduplication shapes and meanings. Reduplication can represent several different meanings in Hiaki, as noted by all the authors cited here, some of which may overlap with others. Certainly in at least its habitual-marking function, reduplication must be inflectional, rather than derivational, and applies fully productively to any eventive verb. The most common se-

mantic functions of reduplication in our corpus are exemplified in (13) below, with their abbreviations:

(13a) Habitual (HAB)

Itepo hunum ke-ke'ewe
 1PL there RED_S-gather.firewood
 'We gather firewood there'.

(13b) Progressive/continuative ('in progress'), (PROG)

Uu hamut totoi kava-m bwa-bwaata
 the woman chicken egg-PL RED_S-stir
 'The woman is mixing the porridge'.

(13c) Emphatic (EMPH) (often in Imperative [IMP] examples)

Kat=ee uka soto'i-ta hunum ma-mana
 NEG.IMP=2SG the.ACC pot-ACC there RED_S-put
 'Don't put that pot there'.

With particular verb stems, reduplication can have other semantic effects. Previous authors have noted that some verb stems must reduplicate if they have a plural argument (a plural subject with intransitive verbs, a plural object with transitive verbs). (This ergative/absolutive pattern of agreement is also seen in the Uto-Aztecan verb stems that supplete for number; see, e.g., Guerrero 2004 or Tubino, Haugen, and Harley 2006 for discussion of this phenomenon in Hiaki.) We have also noted a third, infrequent semantic effect of reduplication with certain verb stems: A "change-of-state" interpretation arises when some stative verbs are reduplicated. Each of these effects is discussed below.

If each distinct reduplicant shape is an independent morpheme (a "dupleme" in the terminology of Spaelti 1997), then we would expect that a particular meaning would require a particular reduplicant shape. In fact, it seems that all reduplication shapes can express all three of the primary meanings of reduplication; the availability of a particular reduplicant shape is not conditioned by the meaning expressed but rather by the particular verb stem, with one (very limited) class of exceptions, discussed below. In general, then, the reduplicant shapes in Hiaki are allomorphs ("alloduples" in Spaelti's terminology), with the CV shape the "elsewhere" or default form and other shapes being irregular forms. As we have seen above, in some cases the particular reduplicative allomorph a verb requires is determined by a combination of the morphological and phonological properties of the stem (the disyllabic and closed-syllable cases); in others, the allomorph required is irregular, being simply a listed property of the stem (the gemination or reduplication + gemination cases).

The only class of reduplicant shape variation in which a general form/meaning correspondence may exist involves the semantically exceptional “plural agreement” reduplication. In the plural agreement cases we have examined thus far, the agreeing reduplication may contrast with a different form for aspectual or emphatic reduplication on the same verb stem; when such a reduplicant contrast exists, it is the agreeing reduplicant which takes the default CV form. We discuss these cases in 4 below.

First, we give examples of each of the primary reduplication meanings being expressed (on different verb stems) by each possible reduplicant shape. We then go on to describe the more restricted classes of meanings associated with reduplication and their relationship to reduplicant shape.

3.1. Primary meanings of reduplication: all reduplicant shapes. All of the three primary meanings conveyed by reduplication can be instantiated by each of the reduplicant shapes listed above, as shown by the following groups of examples from our corpus.

In (14), we give examples of the most common meaning marked by reduplication, habitual aspect, with verbs reduplicating with a light syllable, a closed syllable, two light syllables, gemination only, and reduplication with gemination.

(14) Habitual

(14a) RED_S

Uu yoeme kuchi'i-m bwa-bwawite
the man knife-PL RED_S-sharp.INTR

‘The man sharpens knives’.

(14b) RED_{CL}

Aapo pahkowa-u hiva kit-kitte
3SG festival-at always RED_{CL}-knead

‘She only makes dough at fiestas’.

(14c) RED_{SS}

Nee hiva uka soto'o-ta hunum move-movekta
I always the.ACC pot-ACC there RED_{SS}-invert

‘I always put the pot there, upside down’.

(14d) RED_G

Nee hiva hunum soto'i-po aa=kommonia
I always there pot-in 3SG=RED_G.soak

‘I always soak it in that pot’.

- (14e) RED_{S+G}
Uu miisi hiva kari-po kik-kivake
 the cat always house-in RED_{S+G}-enter
 'The cat always comes into the house'.

In (15), we present examples of emphatic reduplication in each of the possible reduplicant shapes. Emphatic reduplication occurs frequently in (negative) imperatives.

(15) Emphatic

- (15a) RED_S
Kat=ee hunum ke-keka
 NEG.IMP=2SG there RED_S-stand
 'Don't stand there!'
- (15b) RED_{CL}
Kat=ee hunuka kuta-ta kot-kotta
 NEG.IMP=2SG that.ACC lumber-ACC RED_{CL}-break
 'Don't break that lumber!'
- (15c) RED_{SS}
Kat=ee aa kamu-kamukta
 NEG.IMP=2SG 3SG RED_{SS}-retain.in.mouth
 'Don't hold it in your mouth!' (I.e., 'Swallow it!')
- (15d) RED_G
Kat uusi-ta mahhau-tua
 NEG.IMP child-ACC RED_G-afraid-CAUS
 'Don't frighten the child!'
- (15e) RED_{S+G}
Kat a'avo am kik-kiima
 NEG.IMP there them RED_{S+G}-bring
 'Don't bring them in there!'

Finally, in (16), examples of progressive/iterative reduplication in each of the possible reduplicant shapes are given, where the action of the verb is ongoing, usually involving a repeated action, at the time of the utterance.

(16) Progressive

- (16a) RED_S
U uusi wakavak-ta bwa'a-ka-u e-'e'ete
 the child wakabaki-ACC eat-PPL-OBJ.REL RED_S-burp
 'The child is burping the wakabaki that he ate'.

- (16b) RED_{CL}
Uu hamut vaka-ta cham-chamta
 the woman bamboo-ACC RED_{CL}-mash
 'The woman is mashing the bamboo'.

- (16c) RED_{SS}
Uu yeni'ichi kia hala-halahte
 the smoker just RED_{SS}-gasp
 'The smoker is breathing with great difficulty'.

- (16d) RED_G (not in the corpus with progressive meaning)

- (16e) RED_{S+G}
Vempo hunum hoh-hoteka-su, sahak
 they there RED_{S+G}-sit.down-PRT leave.PL.PRF
 'They were starting to sit there and then they finally left'.

In sum, it seems that for any of the primary meanings of reduplication, any of the reduplicant shapes may express that meaning. Note that the emphatic meaning and other meanings often overlap in a given sentence: a progressive reduplication might also convey emphatic surprise at the amount of the activity that is going on, or a habitual reduplication might also convey emphasis about the perennial nature of the activity or the degree to which the activity is carried to extremes.

3.2. Secondary meanings of reduplication. As noted above, reduplication can also express a few other notions with restricted classes of verb roots, one of which is purely grammatical and two of which are Aktionsart-related. The former—plural argument agreement reduplication—is familiar from previous studies. The other two are, as far as we know, previously unreported.

A very few Hiaki verbs require reduplication when their subject is plural. For example, the verb *koche* 'sleep' requires reduplication with a plural subject, as shown in:

- (17a) *Aapo/*Vempo koche*
 3SG/*3PL sleep
 'He's sleeping'. / *'They're sleeping'.

- (17b) *Vempo ko-koche*
 3PL RED-sleep
 'They're sleeping'.

The other two classes of secondary effects of reduplication emerged from a test involving combining the reduplicated form with the past perfective suffix *-k*. This suffix is incompatible with reduplication in the majority of

cases, as in (18) below, since reduplication expresses habitual or ongoing activity and the perfective suffix asserts that the event denoted by the verb was episodic and culminated in the past.³¹

- (18) **Ume o'ow-im hunum ha-ha'abwe-k*
 the.pl man-pl there RED-stand.PL-PRF
 'The men stood there'. (Grammatical without *-k*, meaning 'The men always stand there', or with imperfective *-n*, meaning 'The men always stood there'.)

During the creation of the database, MFL tested each reduplicated form with the *-k* suffix, to help identify any forms which were exceptions to the usual habitual or ongoing interpretation for reduplication. In so doing, two small classes of verbs emerged whose reduplicated semantics are different than usual. These verbs do not necessarily receive a habitual meaning when reduplicated, rather their meaning changes in another way.

First, with some (but not all) stative verbs, reduplication seems to contribute a "change-of-state" meaning. In their base form, stative verbs normally cannot take a *-k* perfective suffix at all, as one would expect given their meaning. When reduplicated, however, some stative verbs can take this suffix. In these cases, reduplication changes the stative verb into an accomplishment, indicating an event of change into the state denoted by the unreduplicated verb.³²

- (19) *Ama ne a ta-ta'a-k* from *ta'a* 'know'
 over.there 1SG him RED-know-PRF
 'Over there, I got/came to know him'.
- (20) *U'u uusi o-'omte-k* from *omte* 'angry'
 the child RED-angry.intr-PRF
 'The child got/became angry'.
- (21) *U'u uusi uka chu'u-ta o-'omta-k* from *omta* 'angry at'
 the child the.ACC dog-ACC RED-angry.TR-PRF
 'The child scolded that dog'.

³¹ To express past habitual activities, the past imperfective *-n* suffix is used in combination with reduplication, as in:

- (i) *Nee hiva muuni-m bwa-bwa'e-n*
 1SG always bean-PL RED_s-eat-P.IMPF
 'I always used to eat beans'

³² Harley and Amarillas (2003) proposed a treatment of these change-of-state meanings that attempted to bring them into the fold of the generally "pluralizing" semantics of reduplication in Hiaki.

Second, it appears that reduplication applied to certain semelfactive verbs does not convey habitual or progressive tense but rather just repetition or iteration, and is hence compatible with the perfective *-k* suffix. The semelfactive verb class, exemplified in English by *knock*, *hop*, or *tap*, is made up of verbs which have punctual aktionsart and do not indicate any change of state; they are often or easily interpreted as occurring iteratively. In Hiaki, many of these verbs may co-occur with *-k* when reduplicated. This seems to be especially true of verbs of sound emission.³³ When reduplicated, they just indicate that the activity was repeated, not that it was habitual.³⁴ The *-k* morpheme contributes its normal perfective interpretation in these cases:

- (22) *Aapo si a-'ache-k*
 3SG EMPH RED-laugh-PRF
 'He really laughed out loud'.
- (23) *Aapo ameu cha-chaek*
 3SG to.them RED-call-PRF
 'He called them'.
- (24) *Aapo uka hu'up-ta cha-chaek*
 3SG the-ACC mesquite-ACC RED-scrape-PRF
 'He scraped the mesquite'.
- (25) *Aapo si ko'oko-mai-si he'o-he'okte-k*
 3SG very pain-seem-ADV RED-hiccup-PERF
 'He has hiccupped very painfully'.
- (26) *Uu yoeme uchi hi-hiavihte-k*
 the man again RED-breathe-PRF
 'The man breathed again/started to breathe again'.
- (27) *Aapo=su aa he-hewi-te-k*
 3SG=PRT 3SG RED-"yes"-VZR-PRF
 'He said it was all right'.

³³ Dedrick and Casad (1999:264) mention this phenomenon and give a nice example of this type:

Bwicha hiva kau-po veha bwit-wasa-wasak-ti aane
 smoke just mountain-on well smoke-"wasa-wasak"-ti do
hume'e kanyoon-im
 those cannon-PL

'The mountain was covered with smoke; the cannons were going "wasa-wasak" as they spouted smoke from their muzzles'.

³⁴ This is likely also the situation with the progressive meanings in (16a) and (16c) above.

- (28) *Aapo uka uusi-ta si ousi ko-kouria-k,*
 he the.ACC CHILD-ACC EMPH hard RED-swing-PRF,
ian into uu uusi tom-po wante
 now and the child stomach-in ache

‘He swung the child very hard, and now the child is sick to his stomach’.

- (29) *Empo kia kaa emo chi-chike-k*
 2SG just not 3.REFL RED-comb-PRF

‘You just did not comb your hair’.

Houser et al. (2006) note a similar phenomenon with semelfactive verbs in Oregon Northern Paiute (also a Uto-Aztecan language, although in the Northern rather than the Southern subfamily). In Oregon Northern Paiute, reduplication normally conveys a distributive meaning (multiple events, either due to multiple individuals involved or repetition of the events in time), but with semelfactives it simply indicates iteration within a single event. They distinguish between “event-external” pluractional meaning (distributive) and “event-internal” pluractional meaning (iterative), adopting the distinction from Cusic (1981). The distinction comports well with the Hiaki data, where the default habitual or emphatic meaning is event-external, but where (some) semelfactive verbs allow the iterative, event-internal meaning. Since the *-k* perfective morpheme indicates the completion of a single event, it may co-occur with event-internal reduplication, though not with event-external reduplication.

3.3. Reduplication with *-k* in the possessive construction. One final class of verbal forms that reduplicate in the usual habitual meaning and yet allow a suffix *-k* to appear on the reduplicated form emerged from the database. These are the very interesting Hiaki denominal possession and “use” constructions, described in Jelinek and Escalante (1988) and Escalante (1990).

In these constructions, a nominal root is inflected with verbal morphology and becomes an intransitive verb whose subject is interpreted as (usually) a possessor of the nominal root. (Occasionally, rather than a purely possessive reading, these constructions receive a “use” meaning, where the subject is understood to use the nominal root; there are also a few cases of a “birthing/spawning” interpretation.)

- (30a) *Aapo kava’e-k*
 3SG horse-PPL

‘He has a horse’. (Lit., ‘He is horsed’.)

(30b) *Inepo tomi-ne*

1SG money-FUT

‘I will have money’. (Lit., ‘I will be moneyed’.)

Any verbal morphology can license this possessive verb use of nominal roots, including reduplication:³⁵

(31) *Aapo hiva ka-kava’e*

3SG always RED-horse

‘He always has a horse’.

However, in the absence of other verbal morphology, in present tense possessives, a *-k* is added to the nominal stem, as in (30a) above. This *-k* is analyzed by Jelinek and Escalante (1988) as perfective *-k*. However, in the possessive construction, the *-k* does not imply a past or perfective semantics, hence we gloss it above as PPL rather than PRF.³⁶

Our speakers rejected reduplication with *-k* in straightforward episodic possessive contexts. For example, the sentence in (32) below was judged unacceptable with reduplication on an episodic interpretation:

(32) *Aapo yu’in chiiva-k/*chi-chiva-k*

3SG many goat-PPL/RED-goat-PPL

‘He has a lot of goats [right now]’.

Consequently, we conclude that reduplication in these contexts is contributing its usual habitual or emphatic meaning, rather than indicating plurality of possessed things (if it was simple plurality, 32 would be acceptable with reduplication). Puzzling, however, is the fact that some reduplicated possessives DO allow the possessive *-k* suffix, with no apparent change in meaning from the examples without *-k*. Below are some examples of this type from our database:³⁷

³⁵ The stem noun in this example is *kava’i* ‘horse’; lowering of the final vowel to *-e* in the possessive form is a general process with possessed noun stems ending in *-i*. See discussion of this and related cases, as well as some comparisons with related possessive constructions in other Uto-Aztecan languages, in Haugen (2004).

³⁶ Jelinek and Escalante (1988) class these with *bahuvrihi* constructions, comparing them to inalienable possessive participial forms in English such as *he is long-legged*, *she is blue-eyed*, etc.

³⁷ “Wearing” constructions exhibit the same pattern of co-occurring with *-k*:

(i) *Vempo si hunnera mo-move’e-k*

3SG EMPH ugly RED-hat-PPL

‘They are wearing ugly hats’. (Lit., ‘They have very ugly hats’.)

(ii) *Vempo si uhyoi-m ko-koka-k*

3PL EMPH pretty-PL RED-necklace-PPL

‘They are wearing very pretty necklaces’. (Lit., ‘They have very pretty necklaces.’)

- (33a) *Ume Yoi-m si vu'um ko-kowe-k*
 the Mexican-PL EMPH many RED-pig-PPL

'The Mexicans have a lot of pigs'.

- (33b) *Hunume'e si ve-vette-k hi-hiapse-k*
 those EMPH RED-heavy-ACC RED-heart-PPL

'Those people have a heavy heart'.

- (33c) *Vempo yo'owe-m a-'asoa-k*
 3PL old-PL RED-child-PPL

'They have grown children'.

One significant possibility is that these are emphatic reduplications; in nearly all of these examples, some type of emphatic element appears (e.g., *si* 'very, really'). If that is the explanation, then we need an account of why emphatic reduplication may co-occur with *-k* in possessive constructions, although normally it may not.³⁸ More investigation is needed before a more definitive analysis of these examples can be proposed.

We now turn to the cases in which a single stem allows multiple reduplicant shapes with contrastive meanings.

4. Contrastive reduplicant shapes within a single stem. Above, we have shown that in the vocabulary as a whole, any of the reduplicant shapes may indicate any of the usual meanings of reduplication—habitual or continuative aspect, or emphasis. Further, it seems generally to be the case that reduplicant shape is fixed for a given stem, no matter which of the usual meanings is being expressed.

However, with certain verb stems, the literature reports that different reduplicant shapes on a single verb may be semantically contrastive. In particular, a distinction is reported between light-syllable reduplication and reduplication with gemination applied to the same stem, for a few verbs, by both Escalante (1990) and Dedrick and Casad (1999:266), and this alternation is supported within those same verbs in our elicitation data. In two cases, we have also identified a contrast between light-syllable reduplication and closed-syllable reduplication. Notice that in all reported cases, one of the contrasting shapes is the default light-syllable reduplication, while the other permitted shape is one of the more marked forms, either the irregular reduplication with gemination form or the closed-syllable subpattern. In no cases that we have come

³⁸ A related point is that the other major class of denominal verbs—causative verbs of creation—behave like normal eventive verbs, receiving a habitual reading and forbidding the *-k* suffix when reduplicated. Such verbs include *ka'a-te* 'house-do', *kora-te* 'fence-do', and *kuh-te* 'cross-do', which mean 'build (a) house', 'build fence', and 'make (the sign of) the cross', respectively. See Haugen (2004) for a full analysis of both types of denominal verb.

across does a single verb stem occur with two different MARKED reduplicant shapes—for example, no verb occurs with both closed-syllable reduplication and reduplication with gemination.

However, a cautionary note is in order with respect to the results presented in this section. As noted in 2.6 above, when the database was constructed, the reduplicated shape recorded was a spontaneously produced form; we did not systematically evaluate, for each verb, whether alternative reduplicant shapes were possible, with the same or different meanings. Consequently, for most verbs, we have no explicit negative evidence (in the form of an ungrammaticality judgment) that alternative reduplicant shapes are impossible. The contrastive cases described below involve contrasts which were noticed by happenstance, either in the literature or during an elicitation interview, not during construction of the database. Consequently, they are almost certainly not an exhaustive list. Nonetheless, some suggestive patterns do emerge from these cases and are detailed below.

4.1. Habitual reduplication contrasting with emphatic reduplication. Contrastive reduplication shapes are reported for certain stems by Escalante (1990). In the cases he discusses, the light-syllable reduplicant is used for the usual habitual meaning and the reduplication + gemination form is used for particularly emphatic, idiosyncratic, or iterative interpretations; this latter process is termed “secondary reduplication” by Escalante. His examples are:

(34a) *Aapo bwi-bwika*

3SG RED_S-sing

‘He sings’.

(34b) *Aapo bwib-bwika*

3SG RED_{S+G}-sing

‘He is a professional singer’.

(35a) *Aapo no-noka*

3SG RED_S-speak

‘She speaks’.

(35b) *Aapo non-noka*

3SG RED_{S+G}-speak

‘She gossips’.

Our consultants also found a contrast in meaning between these pairs, agreeing with Escalante’s characterization of the effect in (35) but disagreeing

with his characterization of (34). The following pair of examples illustrate the contrast as MFL perceives it:

- (36) *Aapo si uhyoi-si bwi-bwika*
 3SG very beautiful-ADV RED_S-sing

‘He sings very beautifully, he’s a professional singer’.

- (37) *Aapo si yu’in bwika-m ta’a-kai si bwib-bwika*
 3SG very many song-PL know-PPL very RED_{S+G}-sing

‘Because he knows a lot of songs, he sings a lot’. (Lit., ‘Knowing a lot of songs, he always sings’.)

Comment: “It’s not like it’s habitual, it’s just circumstances.”

This is perhaps consistent with the notion that gemination may be used in combination with reduplication to indicate additional emphasis. Another verb which has been reported to exhibit the effect is *vahume* ‘swim’; our consultants produced the following pair of sentences to illustrate the different meanings:

- (38) *Ume paato-m hunu-m va’am-po va-vahume.*
 the.PL duck-PL that-PL water-in RED_S-swim

‘The ducks swim in that water’.

- (39) *Inepo hunum vav-vahume*
 I there RED_{S+G}-swim

‘I swim there!’

Comment: “It’s my spot, no one else goes there!”

However, it seems clear that this process is not completely general. Additional work is needed to confirm whether other verbs which have been reported to exemplify this pattern do so for our consultants, and to discover how generally this pattern may be extended to other verbs.

4.2. Plural reduplication contrasting with emphatic/habitual reduplication. Both Escalante and Dedrick and Casad note that the verb *koche* ‘to sleep’ can take two different reduplicant shapes which correlate with two different meanings. Light-syllable reduplication with this stem represents plural subject agreement, as shown in (17) above, while reduplication with gemination is used to convey emphasis or habitual tense, as follows:

- (40a) Plural subject *ko-koche*
 (40b) Habitual/Emphatic *kok-koche*

- (40c) *Nee hiva woh mamnim-po tukaa-po kok-koche*
 1SG always two five-at night-at RED_{S+G}-sleep
 ‘I always go to sleep at 10 PM’.

Note that when the reduplication + gemination form is used, there is no additional reduplication present with plural subjects—the morphological contrast between plural and singular forms disappears:

- (41a) *Kat=ee kok-koche!*
 NEG.IMP=2SG RED_{S+G}-sleep
 ‘Don’t you sleep!’
- (41b) *Kat=em kok-koche! (*ko-kok-koche)*
 NEG.IMP=2PL RED_{S+G}-sleep (*RED_S-RED_{S+G}-sleep)
 ‘Don’t you all sleep!’

Dedrick and Casad (1999:266) note the same contrast between light-syllable reduplication for plural agreement and reduplication with gemination for emphasis in three additional stems:

- | | | | |
|------|-------------------------|------------------------------|-------------------------------|
| (42) | Stem | Plural Subject | Emphasis |
| | <i>noóka</i> ‘talk’ | <i>no-noka</i> | <i>non-noka</i> ³⁹ |
| | <i>teéve</i> ‘be.tall’ | <i>te-teve</i> ⁴⁰ | <i>tet- teve</i> |
| | <i>náako</i> ‘be.drunk’ | <i>na-naako</i> | <i>nan-naako</i> |

Judging from these examples, if a plural agreement reduplicating stem distinguishes between plural and emphatic reduplication, then the plural reduplication is the one that takes the light-syllable shape.

One of our consultants reported the same semantic contrast obtaining between a closed-syllable reduplicant and a light-syllable alternate with a compound verb, *bwalwotte* ‘weaken (INTR)’, and its transitive counterpart *bwalwotta* ‘weaken (TR)’. This verb is made up of two stems, *bwal-*, possibly the stem form of the adjective *bwalko* ‘soft’ (see discussion below 10 above), and *-wotte*, a verb stem. As is discussed in more detail in 5 below, reduplication in all compound verbs applies to the rightmost stem, leaving the first element in the compound verbs unaffected; the forms **bwal-bwalwotte* or **bwa-bwalwotte* are impossible. As we should expect for a verb stem of this shape (*-wotte*: CVCtel/CVCta), the reduplicant shape is CVC in the primary habitual or emphatic use:

³⁹ Note that this is the same form as in (35b) above, though in Escalante’s data it contrasted with habitual reduplication rather than plural reduplication.

⁴⁰ Our consultants felt that this form was not a word.

- (43) *Kat=ee bwal-wot-wotte*
 NEG.IMP=2SG bwal-RED_{CL}-weaken.intr
 ‘Don’t get weak!’

- (44) *Kat=em emo bwal-wot-wotta*
 NEG.IMP 2PL.REFL bwal-RED_{CL}-weaken.tr
 ‘Don’t make yourselves weak!’

However, for at least one speaker, this verb also shows plural argument reduplication, used when speaking of more than one person, which is (as expected) compatible with the perfective *-k* suffix.⁴¹ Interestingly, the reduplicant for plural arguments takes the light CV shape, not the closed CVC shape of the emphatic reduplication in the previous sentences:

- (45) *Tua si’ime bwal-wo-wotte-k*
 really all bwal-RED_S-weaken-PRF
 ‘Everyone got weak’.

In this case, and for this speaker, then, light-syllable plural agreement reduplication contrasts with closed-syllable root reduplication, rather than with geminating reduplication.⁴²

We have also found a similar contrast between closed-syllable reduplication and light-syllable plural argument reduplication with the verb *chepte* ‘step, jump’, as in the following examples:

- (46a) *Kat=ee ae-t chep-chepte!*
 NEG.IMP=2SG 3-sg-on RED_{CL}-step
 ‘Don’t step on it!’
- (46b) *Vempo kamion-po kom che-chepte-k*
 3PL bus-at down RED_S-step-PERF
 ‘They stepped down from the bus’.

In (46b), the nonaspectual nature of the light-syllable reduplication is confirmed by the presence of perfective *-k* and the simple progressive reading (rather than habitual) of (49).

⁴¹ Note that the perfective *-k* test WAS exhaustively performed for each verb. Hence we can be confident that there are not many plural agreement reduplication forms in the database, as these are compatible with *-k* and can be conclusively identified by the *-k* test combined with further elicitation to confirm the singular/plural contrast.

⁴² However, other speakers we consulted used the *bwal-wot-wotte* variant in all contexts, disavowing the *bwal-wo-wotte* form.

Interestingly, however, *chepte* behaves differently when it appears without the *kom* 'down' particle. When *chepte* occurs without *kom*, the closed-syllable reduplicant is the only possible one, used for habitual or emphatic meanings with either singular or plural subjects, as shown in (47) and (48), and **chep-chepte-k* is impossible.

- (47) *Ume uusi-m chep-chepte*
 the.PL child-PL RED_{CL}-jump

'The children are jumpers/jump all the time'.

- (48) *Kat=em/=ee vaso-t chep-chepte!*
 NEG.IMP=2PL/=2SG grass-on RED_{CL}-jump

'Don't step on the grass!'

The light-syllable reduplicant available with *kom chepte* appears only with plural subjects, although it is optional even then:

- (49) *Vempe kom (che)-chepte*
 3PL down RED_S-jump

'They're jumping down'.

We conclude, then, that this may be a case of two lexical entries, one *chepte* 'jump', with the usual reduplication properties of its class, and one *kom chepte* 'jump down', which is lexically specified for plural agreement reduplication. The plural agreement reduplication form requires a light-syllable reduplicant; the habitual/emphatic reduplication form follows the reduplicant shape rule appropriate to this verb class (CVC-*te*).

To sum up the results above with respect to contrastive reduplicant shapes, then, we see that a few stems which show plural reduplication use a different reduplicant shape to indicate habitual or emphatic reduplication. In such cases, the plural form uses the less-marked light-syllable reduplicant shape. The more-marked shape, either reduplication with gemination or closed-syllable reduplication, is used for the habitual or emphatic meaning.

4.3. Light-syllable plural reduplication and tone. Demers et al. (1999) and Dedrick and Casad (1999:31) report that tone placement in reduplicated forms behaves in different ways with different stem types. Demers et al. state that when stems with default lexical tone placement on the first mora are reduplicated, tone stays leftmost in the reduplicated form, thus appearing on the reduplicant. Tone also always appears on the reduplicant with stems that take reduplication + gemination shapes. However, with stems that have exceptional tone placement on the second mora of the word, the reduplicant does

not bear tone. Interestingly, Dedrick and Casad (1991:31) claim that this is also the case for at least some stems which undergo closed-syllable reduplication, although it is not true of others (Demers et al. 1999:46).

As noted in 1.2 above, the location of tone on the stem does not predict reduplicant shape. Nonetheless, in the contrastive plural agreement reduplication cases, tone placement may be significant.

Demers et al. (1999), in proposing their overall analysis of tone placement in Hiaki, note that certain light-syllable reduplicant forms are exceptional to their analysis. Recall that if a base receives high tone on its leftmost mora (the default placement), then the reduplicated light syllable will bear the high tone—in other words, the tone remains leftmost in the word. In the exceptional cases, however, the reduplicated light syllable bears low tone, and the high tone stays in place on the first syllable of the verb stem. The usual and exceptional patterns are illustrated in (50) below, as described by Demers et al.:

(50)	STEM		REDUPLICATED	
(50a)	<i>táse</i>	‘cough’	<i>tá-tase</i>	Usual
(50b)	<i>kóche</i>	‘sleep’	<i>ko-kóche</i>	Exceptional

Interestingly, in the cases reported by Dedrick and Casad (1991) in which a plural agreement reduplicant contrasts with a geminated reduplicant (given in 42 above), none of the plural argument reduplicants bear high tone, while all the geminated ones do (examples repeated in 51).

(51)	STEM		PLURAL SUBJECT	EMPHASIS
	<i>nóoka</i>	‘talk’	<i>no-noka</i>	<i>nón-noka</i>
	<i>teéve</i>	‘be.tall’	<i>te-teve</i>	<i>tét-teve</i>
	<i>náako</i>	‘be.drunk’	<i>na-naako</i>	<i>nán-naako</i>

Demers et al.’s analysis would predict high tone on the reduplicant in the case of *náako* ‘drunk’ (in 42c), since in that form, the stem bears high tone on the leftmost mora. It is striking that in none of these examples does a light-syllable plural agreement bear tone, in contrast to the usual pattern. The light-syllable/closed-syllable contrast identified by our consultants between *chechepte* (plural object)/*chepchepte* (habitual) and *bwalwowotte* (plural subject)/*bwalwotwotte* (habitual) is analogous: the phonologically less prominent (CV) reduplicant represents plural agreement, while the more prominent and more morphologically marked CVC reduplicant encodes the usual habitual/emphatic meaning. This may suggest that plural agreement reduplication

is necessarily nonprominent and cannot bear tone.⁴³ Again, systematic investigation of this hypothesis will have to be relegated to the future.

5. Compound verbs and reduplication. Finally, we briefly turn to the very interesting placement of the reduplicative morpheme with certain types of multimorphemic verbs. Hiaki has productive noun incorporation and verb serialization/incorporation processes. When a noun is incorporated into a verb (as in 52a) and the resulting form is reduplicated (as in 52b), the reduplication applies only to the verb stem, resulting in the reduplicant appearing word-internally.

(52a) *kuta-siute*
stick-split
'wood-splitting'

(52b) *kuta-siu-siute*
stick-RED-split
'wood-splitting habitually'

Similarly, when a verb is serialized with another verb and the resulting form is reduplicated (with the habitual semantics taking scope over the entire construction), the reduplication again applies only to the rightmost head verb, not to the entire V-V complex.⁴⁴

⁴³ A natural question is whether the distinction can be made using tone only with stems which require a CV reduplicant; the habitual/emphatic reduplicant would bear high tone, as usual, but the plural reduplicant would be toneless, leaving tone on the first syllable of the stem. The investigation of this possibility would require the identification of some plural agreement reduplicating stems which only allow a CV reduplicant; no such stems are documented in the corpus or elsewhere thus far. We leave the investigation of this possibility to future research.

⁴⁴ Note that in compositional cases such as these, reduplication can occur on the first member of the compound if the habitual meaning is intended to take scope only over it. In fact, reduplication may occur on both the embedded and matrix verbs if the situation warrants it.

(i) *Inepo aa nok-i-'i'aa ne vetchi'ivo*
1SG 3SG speak-RED-want me for
'I always want him to speak for me'.

(ii) *Inepo aa no-nok-ii'aa*
1SG 3SG RED-speak-want
'I want him to always be the speaker/the one who habitually speaks' [e.g., at a council meeting].

(iii) *Inepo aa no-nok-i-'i'aa*
1SG 3SG RED-speak-RED-want
'I always want him to always be the speaker'.

- (53) *Uu Wo'i Wakila ama hi'ibwa hariu-si-sime.*
 the Coyote Skinny there eat look.for-RED-go

'Skinny Coyote was going here and there looking around for something to eat'.

This "head-marking" behavior of reduplication is discussed in detail in Haugen and Harley (2006). This internal reduplication pattern was evident in several forms in the corpus. This is of particular interest because of the semantically opaque nature of most of the forms in the database.

Recall that the corpus was constructed from a list of verbs that were headwords in the Molina et al. (1999) dictionary. Each verb merited its own entry because of its noncompositional nature. That is, productive noun incorporations or verb serializations like those listed above do not appear as headwords in the dictionary, because they are interpreted compositionally. Complex verb forms which appear in the dictionary are thus likely to be lexicalized/idiomatized to some degree, as, e.g., *chikipona* 'tickle':

- (54a) *chike* (adj.): 'little'

- (54b) *poona* (TRANS verb): 'to bang, hit, beat around' (also: 'to play an instrument')

- (54c) *chikipona* (TRANS verb): 'to tickle'

- (54d) *Aapo hiva yee chiki-ponne*
 3SG always people little-RED_G.hit

'He always tickles people'.

Although the source forms which make up the compound verb are clear, the interpretation of the compound is idiomatic. Nonetheless, this semantic lexicalization does not affect the reduplication pattern of the verb, which continues to reduplicate internally to the compound, rather than on its leftmost edge.

In constructing the corpus, several such internally reduplicating verbs were identified. Interestingly, many of these are not just semantically opaque but are morphologically opaque as well. The reduplication pattern alone provides evidence that the verb is internally complex, as at least one of the components identified by the reduplication pattern never occurs independently—they are cran-morphs, appearing only in these compound verb stems. For example, in the compound verb *bwalwotte* 'weaken' (discussed in 4.2), which reduplicates as *bwal-wot-wotte*, the reduplicating stem *-wotte* does not exist as an independent verb but occurs only in this form. The first part of the compound, *bwal-*, may be historically related *bwalko* 'soft' or *bwala*

'sheep', but this conjecture is based only on the evidence provided by reduplication that *bwal-* is an independent morpheme; the form is emphatically not compositional.

In (55) below, a complete inventory of the internally reduplicating verbs that emerged from the corpus is provided. In many cases, only one of the two root morphemes identified by reduplication can be even tentatively connected to a free word of the language. Suggestions for such connections, based entirely on form and intuitions about potential semantic relatedness, are provided in the fourth column. If a form is not listed in the fourth column, it means that we could not (even tentatively) identify it as connected with some free word of the language. Further, despite the suggested decompositions here, it is important to note that in most cases our consultants denied that these verbs could be broken down into the meaningful subparts, and felt that the suggested decompositions seemed farfetched or implausible. Consequently, the evidence for idiomatization and lexicalization of these forms in the synchronic language is quite strong; this makes it all the more remarkable that the internal reduplication pattern is retained. In the list below, we indicate a morpheme boundary in the base verb only when the source forms are quite clear both semantically and morphologically. In most cases, the putative morpheme boundaries must be deduced from the reduplicated form.

(55) Opaque compound verbs reduplicated

VERB	REDUPLICATION	VERB MEANING	RELATED WORD(S)?
<i>bwahsuma</i>	<i>bwah-su-suma</i>	braid	<i>bwahim</i> 'loincloth'
<i>chiki-pona</i>	<i>chiki-ponne</i>	tickle	see (54) above
<i>elesikile</i>	<i>ele-si-sikile</i>	itch	<i>sikili</i> 'red'
<i>ha'achihte</i>	<i>ha'a-chih-chihte</i>	sneeze	<i>chihakte</i> 'splash'
<i>hiavih-muuke</i>	<i>hiavih-mu-muuke</i>	gasp, be suffocating	<i>hiavihte</i> 'breathe'
			<i>muuke</i> 'die'
<i>hipeteka</i>	<i>hippe-te-teka</i>	make bed	<i>hipetam</i> 'bed'
			<i>teeka</i> 'lay across'
<i>hunhiawa</i>	<i>hun-hi-hiawa</i>	tease, deride	<i>hia</i> 'sound, speak'
<i>hu'unakte</i>	<i>hu'u-na-nakte</i>	threaten, ALSO create	??
<i>iva'achaka</i>	<i>iva'a-cha-cha'e</i>	embrace, hug	<i>ivakta</i> 'embrace'
<i>iva'anama</i>	<i>iva'a-na-nama</i>	cradle, hold, embrace	<i>ivakta</i> 'embrace'
<i>kuchu-sua</i>	<i>kuchu su-sua</i>	fish	<i>kuchu</i> 'fish'
			<i>sua</i> 'kill.PL'
<i>kuhtiachi</i>	<i>kuh-ti-tiachi</i>	hateful, mean	??
<i>kupitomte</i>	<i>kupi-tom-tomte</i>	lose sight temporarily	<i>kupte</i> 'blink',
			<i>tomte</i> 'blossom'
<i>lioh-bwania</i>	<i>lioh-bwa-bwania</i>	give thanks	<i>Lios</i> 'God'
			<i>bwania</i> 'vow'
<i>lio-noka</i>	<i>lio-no-noka</i>	pray	<i>Lios</i> 'God'
			<i>nooka</i> 'speak'

<i>machu'unama</i>	<i>machu'u-na-nama</i>	hold in hands, grasp	<i>machuktia</i> 'handful'
<i>maukaroa</i>	<i>mau-ka-karoa</i>	rise very early	<i>maukaapo</i> 'pre-dawn'
<i>naamuke</i>	<i>naa-mu-muke</i>	drunk (SG)	<i>muuke</i> 'die.SG'
<i>namutu</i>	<i>na-mu-mutu</i>	get cloudy	<i>naa-</i> 'cloud'
<i>bwalwotte</i>	<i>bwal-wot-wotte</i>	feel weak	<i>bwalko</i> 'soft'
<i>bwalwotta</i>	<i>bwal-wot-wotta</i>	weaken (TR)	<i>bwalko</i> 'soft'
<i>chit-watte</i>	<i>chit-wat-watte</i>	spit	<i>chichi</i> 'saliva', <i>watte</i> 'falling'
<i>kova-hamti</i>	<i>kova-ham-hamti</i>	concentrate, think	<i>kova</i> 'head', <i>hamti</i> 'broken'
<i>masa-vaite</i>	<i>masa-vai-vaite</i>	flap wings	<i>masa</i> 'wing', <i>vaite</i> 'flap'
<i>kutsaite</i>	<i>kut-sai-saite</i>	become dusk	<i>kut-</i> 'dark'

In addition to noun incorporation and verb serialization, Hiaki has many derivational verb suffixes, many of which trigger internal reduplication just like the compound verb cases described above.⁴⁵ The inceptive suffix *-taite*, for example, creates forms that reduplicate internally, though *-taite* is no longer a free verb in the language:⁴⁶

- (56) *yi'i-taite* *yi'i-tai-taite*
 dance-INCEP dance-RED-INCEP
 'being to dance' 'habitually begin to dance'

Another suffix that behaves this way is *-ii'aa*, the desiderative. Notice that *-ii'aa* contains a long vowel in its first syllable. This vowel shortens under reduplication in the familiar manner, resulting in *-i-'i'aa*, as in *nok-i-'i'aa* 'speak-RED-DESID, habitually want (somebody else) to talk'.

As with some of the noun incorporation cases or verb serialization cases, certain suffixed forms have been idiomatized enough to appear as headwords in the Molina et al. (1999) dictionary, again sometimes in forms whose stem is not independently meaningful. Cases of this kind containing the related

⁴⁵ Classic derivational verbal morphemes like the causative *-tua* or applicative *-ria* do not interact with reduplication; the reduplicant appears to the left of the complex verb stem in the same way that it would without the suffix:

- (i) *luuta* *lu-luuta-ria*
 finish RED-finish-APPL
 'use up' '(habitually) use up on someone'
- (ii) *mahai* *mahhai-tua*
 afraid RED_G-afraid-CAUS
 'really scare someone'

⁴⁶ This suffix represented one case in which MFL and Mr. Leyva clearly preferred different reduplicant shapes. Mr. Leyva, from Sonora, preferred a CV reduplication, *yi'i-ta-taite*. MFL, from Arizona, finds *yi'i-tai-taite* more familiar. (Note that the suffix ends in *-te*.)

suffixes *-ea* or *-eiya* ‘feel’ are listed in (57) below. Again, the reduplication pattern is the primary evidence for a multimorphemic analysis of these verbs; our consultants denied that these forms could be broken down into meaningful subparts.

(57) VERB	MEANING	REDUPLICATED FORM	RELATED WORD?
<i>eo’ot-ea</i>	feel nauseated	<i>eot-e-’ea</i>	<i>eoktiachisi</i> ‘nauseating’
<i>hatt-eiya</i>	be fearless	<i>hatt-e-’eiya</i>	<i>haate</i> ‘gamble’
<i>hu’uneiya</i>	be aware of	<i>hu’un-e-’eiya</i>	
<i>hunneiya</i>	be little	<i>hunn-e-’eiya</i>	
<i>allea</i>	be happy	<i>all-e-’ea</i>	

Interestingly, a frequently used “inclination” suffix (meaning ‘feel like doing X’), *-pea*, itself reduplicates internally WITHIN the suffix, as if it itself were multimorphemic. In (58a), a typical form suffixed with *-pea* is presented; (58b) provides its reduplicated form, in which the suffix *-pea* is split apart into *-p-e-’ea* by the reduplicant:

- (58a) *Aapo hita hoo-pea*
 3SG something do-INCLIN
 ‘S/he feels like doing something’.

- (58b) *Aapo si hita hoo-p-e-’ea*
 3SG EMPH something do-p-RED-INCLIN
 ‘S/he always feels like doing something, s/he can’t sit still’.

Dedrick and Casad (1991) and Molina et al. (1999) take this to be evidence that *-pea* is itself morphologically complex, composed of the postposition *-po* + *-ea*; indeed, it is difficult to imagine how else this pattern could have resulted.

To our knowledge, this type of “head-marking” reduplication has not been documented elsewhere, though “double” reduplication in compounds has been discussed in the related languages Pima (Riggle and Munro 2004) and Tohono O’odham (Miyashita 2004). It has significant implications for any theory of morphology, in particular with respect to the ordering of derivational processes (like compounding) and inflectional ones (like reduplication). These questions go beyond the descriptive goals of the present paper and are addressed in more detail in Haugen and Harley (2006).

6. Conclusions. Above, we have shown that stems which require closed-syllable and disyllabic reduplicant shapes in Hiaki are characterized by a particular morphophonological structure. No morphophonological generalization characterizes the set of stems which require gemination or reduplication + gemination, however, and we conclude that such stems are simply

irregular and must be lexically listed. Light-syllable reduplication is the elsewhere form.

We have also argued that there is no correlation between reduplicant shape and its semantic effect; any shape may produce any of the characteristic semantic effects of reduplication, that is, the different reduplicant shapes are morphophonologically conditioned allomorphs of the basic RED morpheme. Certain marginal semantic effects of reduplication were also identified and discussed.

In a few cases, however, a single stem may exhibit a contrast in reduplicant shape that does correlate with a contrast in meaning. In particular, for some stems, the light-syllable shape of reduplicant required by plural agreement reduplication contrasts with the heavier shape required by emphatic and/or habitual reduplication. For other stems (the “secondary reduplication” cases identified by Escalante 1990), a light-syllable shape conveying habitual action contrasts with a heavier, geminated shape conveying some kind of emphasis. In these few cases, distinctly shaped reduplicative morphemes seem to be involved; however, additional investigation is needed to refine this characterization.

Finally, the interaction of reduplication with complex verb stems was described, highlighting an interesting process of word-internal reduplication in the language. The phenomenon appears with noun-incorporated verbs and with serial verbs, as well as with certain derivational verbal suffixes: reduplication applies to the rightmost element of the complex verb—the head—rather than to the left edge. This process applies even to lexicalized complex words with opaque morphological and semantic structure.

REFERENCES

- CUSIC, DAVID DOWELL. 1981. Verbal plurality and aspect. Ph.D. dissertation, Stanford University.
- DEMERS, RICHARD; FERNANDO ESCALANTE; AND ELOISE JELINEK. 1999. Prominence in Yaqui words. *IJAL* 65:40–55.
- DEDRICK, JOHN M., AND EUGENE CASAD. 1999. *Sonora Yaqui Language Structures*. Tucson: University of Arizona Press.
- ESCALANTE, FERNANDO. 1985. A preliminary view of the structure of Yaqui. M.A. thesis, University of Arizona.
- _____. 1990. Voice and argument structure in Yaqui. Ph.D. dissertation, University of Arizona.
- GUERRERO, LILIÁN. 2004. Verbos de movimiento y posición en yaqui. *Estudios en lenguas amerindias: Homenaje a Ken L. Hale*, ed. Z. Estrada Fernández, A. Fernández Garay, and A. Alvarez González, pp. 199–228. Hermosillo: Universidad Autónoma de Sonora.
- HARLEY, HEIDI, AND MARIA AMARILLAS. 2003. Reduplication multiplication in Yaqui: Meaning × form. *Studies in Uto-Aztecan*, ed. Luis Barragan and Jason Haugen, MIT Working Papers on Endangered and Less Familiar Languages 5, pp. 105–39. Cambridge, Mass.: MITWPL.
- HAUGEN, JASON. 2003. Allomorphy in Yaqui reduplication. *Studies in Uto-Aztecan*, ed. Luis Barragan and Jason Haugen, MIT Working Papers on Endangered and Less Familiar Languages 5, pp. 75–104. Cambridge, Mass.: MITWPL.

- _____. 2004. Issues in comparative Uto-Aztecan morphosyntax. Ph.D. dissertation, University of Arizona.
- HAUGEN, JASON, AND HEIDI HARLEY. 2006. Reduplication in Hiaki (Yaqui) compound verbs and the lexicalist hypothesis. Ms., University of Arizona.
- HOUSER, MICHAEL J.; REIKO KATAOKA; AND MAZIAR TOOSARVANDANI. 2006. Pluractional reduplication in Northern Paiute. Paper presented at the Friends of Uto-Aztecan Conference, University of Utah, Salt Lake City, August 24, 2006.
- JELINEK, ELOISE. 1997. Voice and transitivity as functional projections in Yaqui. *The Projection of Arguments: Lexical and Compositional Factors*, ed. Miriam Butt and Wilhelm Geuder, pp. 195–224. Stanford, Calif.: CSLI Publications.
- JELINEK, ELOISE, AND FERNANDO ESCALANTE. 1988. “Verbless” possessive sentences in Yaqui. In *Honor of Mary Haas: From the Haas Festival Conference on Native American Linguistics*, ed. William Shipley, pp. 411–30. Berlin: Mouton de Gruyter.
- _____. 2001. Unergative and unaccusative verbs in Yaqui. *Uto-Aztecan: Structural, Temporal and Geographic Perspectives*, Papers in Memory of Wick Miller, ed. Eugene Casad and Thomas L. Willett, pp. 171–82. Hermosillo: Universidad Autónoma de Sonora.
- JOHNSON, JEAN. 1940. *El Yaqui*. Ms.
- MARTÍNEZ FABIÁN, CONSTANTINO. 1992. *La reduplicación en lengua yaqui de Sonora*. Tesis de Licenciatura, Universidad Autónoma de Sonora.
- MARTÍNEZ FABIÁN, CONSTANTINO, AND ALBERT ÁLVAREZ GONZÁLEZ. 2005. La reduplicación en lengua yaqui: Entre flexión y derivación. *Lingüística Mexicana* 2:173–202.
- MARTÍNEZ FABIÁN, CONSTANTINO, AND ANA MARIA MUNGUÍA DUARTE. 2006. *Yaqui: A double aligned trochaic feet language*. Ms., Universidad Autónoma de Sonora.
- MIYASHITA, MIZUKI. 2004. O’odham collateral reduplication. Paper presented at the 2004 Workshop on American Indigenous Languages (WAIL), Santa Barbara, California.
- MOLINA, FELIPE S.; DAVID SHAUL; AND HERMINIA VALENZUELA. 1999. *Yoeme–English/English–Yoeme Standard Dictionary*. New York: Hippocrene Books.
- MORAVCIK, EDITH. 1978. Reduplicative constructions. *Universals of Human Language*, vol. 3, *Word Structure*, ed. Joseph H. Greenberg, pp. 297–334. Stanford, Calif.: Stanford University Press.
- RIGGLE, JASON, AND PAMELA MUNRO. 2004. One morpheme, two reduplicants: Pseudo-compounds in Pima. Paper presented at the Seventy-eighth Annual Meeting of the Linguistics Society of America, Boston.
- SPAELTI, PHILLIP. 1997. *Dimensions of variation in multi-pattern reduplication*. Ph.D. dissertation, University of California, Santa Cruz.
- TUBINO, MERCEDES; JASON HAUGEN; AND HEIDI HARLEY. 2006. The syntax of verb–affix hybrids in Hiaki (Yaqui). Paper presented at the Friends of Uto-Aztecan Conference, University of Utah, Salt Lake City, June 24, 2006.